

**IN THE SPECIFICATION:**

The specification as amended below with replacement paragraphs shows added text with underlining and deleted text with ~~strikethrough~~.

Please REPLACE paragraph [0026] with the following paragraph:

**[0026]** The sensor body 1 includes a sensor coil 2 inside. The sensor coil 2 comprises a first sensor coil 2a connected in ~~series~~parallel with a second sensor coil 2b. The first sensor coil 2a and second sensor coil 2b have the same inductance value, size, and number of turns. The core support 3 is made of non-magnetic material that supports the core 4 and is combined to the piston (not shown).

Please REPLACE paragraph [0035] with the following paragraph:

**[0035]** FIG. 6B represents the input waveform of the voltage comparator 11 ~~when~~before a center point (will be referred to as an upper core origin) of the upper core 4a passes a middle point (will be referred to as a coil origin) between the first sensor coil 2a and the second sensor coil 2b, or compression when the piston reaches near a top dead center during a compression stroke. If the triangle pulse is applied from the power source 10, an inductance L2 of the second sensor coil 2b becomes greater than an inductance L1 of the first sensor coil 2a during the negative portion of the triangle pulse input. Accordingly, the input waveform V- input into the negative terminal of the voltage comparator 11 has a longer time delay than the time delay of the input waveform V+ input into the positive terminal of the voltage comparator 11.

Please REPLACE paragraph [0037] with the following paragraph:

**[0037]** FIG. 7A through 7C are waveforms when the upper core origin is ~~traveling toward the first sensor coil 2a from~~has passed the coil origin. In this case, the inductance L1 of the first sensor coil 2a becomes greater than the inductance L2 of the second sensor coil 2b during the negative cycle of the triangle input. Accordingly, the input waveform V+ input into the positive terminal of the voltage comparator 11 has a longer time delay in comparison with the input waveform V- as shown in FIG. 7B. FIG. 7C illustrates a rectangular waveform Vd output from the digital signal processor 12 corresponding to the waveforms in FIG. 7B.